

We claim:

1. A composition of matter, comprising:

a fluid for forming a photoresist layer on a surface of a substrate, the fluid comprising;

photosensitive molecules, each of the photosensitive molecules having an axis, wherein each photosensitive molecules aligns with its axis having a particular direction with respect to the normal to the surface of the substrate when the fluid is formed as a layer on the surface of the substrate, and wherein each photosensitive molecule has a different sensitivity to light of wavelength λ having a first linear polarization parallel to the axis than to light of a second linear polarization orthogonal to the first polarization such that a fluence of light of either one of the first or second polarizations causes a reaction in the photosensitive molecules which allows development of the layer as a photoresist layer, and that same fluence of light of the orthogonal polarization does not cause a reaction which allows development of the layer as a photoresist layer.

2. The composition of matter of claim 1, wherein the fluid has been applied as a layer attached to a semiconductor substrate, and wherein the fluid layer has been solidified and forms a solid photoresist layer, the solid photoresist layer having the photosensitive molecules with axis aligned with respect to the normal to the surface of the substrate.

3. The composition of matter of claim 2, wherein the solidified layer has been exposed to patterned light of wavelength λ .

4. The composition of matter of claim 3, wherein the exposed solidified layer has been has been developed to form a patterned photoresist on the surface of the semiconductor substrate.

1 5. A method, comprising:

2 a) applying a layer of a first fluid for forming a photoresist layer on a surface of a semiconductor
3 substrate, the first fluid comprising;

4 photosensitive molecules, each of the photosensitive molecules having an axis, wherein
5 each photosensitive molecules aligns with its axis having a particular direction
6 with respect to the normal to the surface of the substrate when the fluid is formed
7 as a layer on the surface of the substrate, and wherein each photosensitive
8 molecule has a different sensitivity to light of wavelength λ having a first linear
9 polarization parallel to the axis than to light of a second linear polarization
10 orthogonal to the first polarization such that a fluence of light of either one of the
11 first or second polarizations causes a reaction in the photosensitive molecules
12 which allows development of the layer as a photoresist layer, and that same
13 fluence of light of the orthogonal polarization does not cause a reaction which
14 allows development of the layer as a photoresist layer; and

15 b) solidifying the first fluid layer.

1 6. The method of 5, further comprising;

2 c) inserting the photoresist covered semiconductor wafer into a photolithographic exposure tool;

3 d) immersing the semiconductor wafer in a second fluid transparent to light of wavelength λ ,
4 the second fluid having an index of refraction for light of wavelength λ greater than 1.3;
5 and

6 e) exposing the photoresist layer with patterned light of wavelength λ .

- 1 7. The method of 2, further comprising;
- 2 f) developing the photoresist layer.